

PART 814 SUBPART C NEW FACILITIES

VIII. GROUNDWATER MONITORING

1. The groundwater monitoring program must be capable of determining background groundwater quality hydraulically upgradient of and unaffected by the units and to detect, from all potential sources of discharge, any releases to groundwater within the facility. The Illinois EPA reserves the right to require installation of additional monitoring wells as may be necessary to satisfy the requirements of this permit.
2. The groundwater monitoring wells shall be constructed and maintained in accordance with the requirements of 35 Ill. Adm. Code, 811.318(d) and designs approved by the Illinois EPA.
3. Groundwater monitoring wells shall be installed in the locations shown in **\*\*\*SHOWN IN\*\*\*** , of the permit application, Log No. **\*\*\*LOG NO\*\*\*** and screened in the hydrogeologic unit(s) identified as potential contaminant pathway(s) within the zone of attenuation. All wells as listed in Condition V.9 must be installed so that samples may be taken during the months of **\*\*\*MONTHS OF\*\*\*** and the results submitted to the Illinois EPA by **\*\*\*DATE\*\*\*** .
4. Within 60 days of installation of any groundwater monitoring well, boring logs compiled by a qualified geologist, well development data and as-built diagrams shall be submitted to the Illinois EPA utilizing the enclosed "Well Completion Report" form. For each well installed pursuant to this permit, one form must be completed.
5. Groundwater monitoring wells shall be easily visible, labeled with the Illinois EPA monitoring point designations and fitted with padlocked protective covers.
6. In the event that any well becomes consistently dry or unserviceable and therefore requires replacement, a replacement well shall be installed within ten (10) feet of the existing well. The Illinois EPA shall be notified in writing at least 15 days prior to the installation of all replacement wells. A replacement well that is more than ten feet from the existing well or which does not monitor the same geologic zone is considered to be a new well and must be approved via a significant modification permit.
7. All borings, wells and piezometers not used as monitoring points shall be abandoned in accordance with the standards in 35 Ill. Adm. Code 811.316, and the decommissioning and reporting procedures contained in the Illinois Department of Public Health's (IDPH) Water Well Construction Code, 77 Ill. Adm. Code, Part 920 (effective 1/1/92). In the event specific guidance is not provided by IDPH procedures, the enclosed Illinois EPA monitoring well plugging procedures shall be followed.
8. Groundwater sampling and analysis shall be performed in accordance with the requirements of 35 Ill. Adm. Code 811.318(e) and the specific procedures and methods approved by the Illinois EPA.

9. The following monitoring points are to be used in the groundwater detection monitoring program for this facility:

Upgradient Wells

Applicant Designation

Illinois EPA Designation

\*\*\*DESIGNATIONS\*\*\*

Wells Within Zone of Attenuation

Applicant Designation

Illinois EPA Designation

\*\*\*DESIGNATIONS\*\*\*

Compliance Boundary Well(s)

Applicant Designation

Illinois EPA Designation

\*\*\*DESIGNATIONS\*\*\*

10. The monitoring program, approved by Permit No. \*\*\*PERMIT NO.\*\*\* , shall continue for a minimum period of \*\*\*YEARS\*\*\* years after closure and shall not cease until the conditions described in 35 Ill. Adm. Code, 811.319(a)(1)(C) have been achieved. The operator shall collect samples from all of the monitoring points listed in Condition V.9, test the samples for the parameters listed in Condition V.12 (Lists G1 and G2), and report the results to the Illinois EPA, all in accordance with the schedule in Condition V.17.
11. The applicable groundwater quality standards (AGQS) and the maximum allowable predicted concentrations (MAPC), as listed in ~~Condition 12~~ Attachment X below, are subject to the following conditions:
- a. Temperature and the field parameters involving depth or elevation are not considered groundwater constituents and do not need AGQS.
  - b. For constituents which have not been detected in the groundwater, either the practical quantitation limit (PQL) or the method detection limit (MDL) shall be used as the AGQS.
  - c. MAPCs are only applicable to those wells within the zone of attenuation.
  - d. AGQS are only applicable to upgradient/background and compliance boundary wells.

12. AGQS and MAPC values must be determined for all of the parameters which appear in either Lists G1 or G2 (not including groundwater depth or elevations). The AGQS values shall be calculated using a minimum of four (4) consecutive quarters of groundwater monitoring data and employing the statistical method described in **\*\*\*METHOD\*\*\*** to the application, Log No. **\*\*\*LOG NO.\*\*\*** .

LIST G (Groundwater – Variable)

<u>GROUNDWATER MONITORING PARAMETER</u>	<u>STORETS</u>
Elevation of Bottom of Well (ft. MSL) (Annually without dedicated pumps; every 5 years with dedicated pumps or whenever the pump is pulled)	72020

LIST G1 (Groundwater - Quarterly)

<u>FIELD PARAMETERS</u>	<u>STORETS</u>
pH	00400
Specific Conductance	00094
Temperature of Water Sample (° F)	00011
Depth to Water (ft. below land surface)	72019
Depth to Water (ft. below measuring point)	72109
Elevation of Measuring Point (Top of casing ft. MSL)	72110
Elevation of Groundwater Surface (ft. MSL)	71993

<u>INDICATOR PARAMETERS</u>	<u>STORETS</u>
Ammonia (as Nitrogen; Dissolved) mg/L	00608
Arsenic (Dissolved) ug/L	01000
Boron (Dissolved) ug/L	01020
Cadmium (Dissolved) ug/L	01025
Chloride (Dissolved) mg/L	00941
Chromium (Dissolved) ug/L	01030
Cyanide (Total) mg/L	00720
Lead (Dissolved) ug/L	01049
Magnesium (Dissolved) mg/L	00925
Mercury (Dissolved) ug/L	71890
Nitrate (as Nitrogen, Dissolved) mg/L	00618
Sulfate (Dissolved) mg/L	00946
Total Dissolved Solids (TDS, 180°C; Dissolved) mg/L	70300
Zinc (Dissolved) ug/L	01090

NOTE:

- i. All parameters with the "(Dissolved)" label to the right shall be determined using groundwater samples which have been filtered through a 0.45 micron filter. All other parameters shall be determined from unfiltered samples.
- ii. Maximum allowable predicted concentrations (MAPCs) and applicable groundwater quality standards (AGQS) are given in ug/L except as otherwise noted. Also, the monitoring results should be reported in ug/L units unless otherwise indicated.
- iii. List G1 and List G2 AGQS/MAPC values are included in Attachment X.

LIST G2 (Groundwater - Semiannual)

<u>PARAMETERS (ug/L)</u>	<u>STORETS</u>
Acetone	81552
Acrylonitrile	34215
Alachlor	77825
Benzene	34030
Bromobenzene	81555
Bromochloromethane (chlorobromomethane)	77297
Bromodichloromethane	32101
Bromoform (Tribromomethane)	32104
n-Butylbenzene	77342
sec-Butylbenzene	77350
tert-Butylbenzene	77353
Carbon Disulfide	77041
Carbon Tetrachloride	32102
Chloroethane (Ethyl Chloride)	34311
Chloroform (Trichloromethane)	32106
o-Chlorotoluene	77275
p-Chlorotoluene	77277
Dibromochloromethane	32105
1,2-Dibromo-3-Chloropropane	38760
1,2-Dibromoethane	77651
1,2-Dichlorobenzene	34536
1,3-Dichlorobenzene	34566
1,4-Dichlorobenzene	34571
trans-1,4-Dichloro-2-Butene	49263
Dichlorodifluoromethane	34668
1,1-Dichloroethane	34496
1,2-Dichloroethane	34531
1,1-Dichloroethylene	34501

cis-1,2-Dichloroethylene	77093
trans-1,2-Dichloroethylene	34546
1,2-Dichloropropane	34541
1,3-Dichloropropane	77173
2,2-Dichloropropane	77170
1,1-Dichloropropene	77168
1,3-Dichloropropene	34561
cis-1,3-Dichloropropene	34704
trans-1,3-Dichloropropene	34699
Ethylbenzene	78113
Hexachlorobutadiene	39702
2-Hexanone (Methyl Butyl Ketone)	77103
Isopropylbenzene	77223
p-Isopropyltoluene	77356
Methyl Bromide (Bromomethane)	34413
Methyl Chloride (Chloromethane)	34418
Methylene Bromide (Dibromomethane)	77596
Dichloromethane	34423
Methyl Ethyl Ketone	81595
Methyl Iodide (Iodomethane)	77424
4-Methyl-2-Pentanone	78133
Naphthalene	34696
Oil (Hexane-Soluble) (mg/L)	00550
n-Propylbenzene	77224
Styrene	77128
1,1,1,2-Tetrachloroethane	77562
1,1,2,2-Tetrachloroethane	34516
Tetrachloroethylene	34475
Tetrahydrofuran	81607
Toluene	34010
Total Phenolics	32730
1,2,3-Trichlorobenzene	77613
1,2,4-Trichlorobenzene	34551
Trichloroethylene	39180
Trichlorofluoromethane	34488
1,2,3-Trichloropropane	77443
1,2,4-Trimethylbenzene	77222
1,3,5-Trimethylbenzene	77226
Vinyl Acetate	77057
Vinyl Chloride	39175
Xylenes	81551

NOTE:

- i. All parameters with the "(Dissolved)" label to the right shall be determined using groundwater samples which have been filtered through a 0.45 micron filter. All other parameters shall be determined from unfiltered samples.
  - ii. Maximum allowable predicted concentrations (MAPCs) and applicable groundwater quality standards (AGQS) are given in ug/L except as otherwise noted. Also, the monitoring results should be reported in ug/L units unless otherwise indicated.
  - iii. ~~The preceding list of parameters (G2) includes all those found in Attachment 1 to Appendix C to LPC PA2. The 51 constituents from 40 CFR 141.40 and the parameters from 35 Ill. Adm. Code 620.410 and the parameters from 35 Ill. Adm. Code 302, designated with (\*), (#) and (@) respectively are required to be monitored annually and may not be deleted.~~
  - iii. List G1 and List G2 AGQS/MAPC values are included in Attachment X.
13. Pursuant to 35 Ill. Adm. Code, 811.319(a)(4)(A), any of the following events shall constitute an observed increase only if the concentrations of the constituents monitored can be measured at or above the practical quantitation limit (PQL):
- a. The concentration of any constituent in List G1 of Condition V.12 shows a progressive increase over ~~four (4)~~ eight (8) consecutive quarters.
  - b. The concentration of any constituent monitored in accordance with List G1 or List G2 of Condition V.12 exceeds the MAPC at an established monitoring point within the zone of attenuation.
  - c. The concentration of any organic constituent in List G2, monitored in accordance with Condition V.12 exceeds the preceding measured concentration at any established point.
  - d. The concentration of any constituent monitored at or beyond the edge of the zone of attenuation (compliance boundary) exceeds its AGQS, or pursuant to 811.320(d)~~(4)~~ any constituent monitored at an upgradient well, exceeds its AGQS.
14. For each round of sampling described in Condition 10 of this Section, the operator must determine if an observed increase has occurred within ~~45 days~~ 90 days of the initial sampling date ~~the samples were collected~~. If an observed increase is identified, the operator must also notify the Illinois EPA in writing ~~within 10 days~~ and follow the confirmation procedures of 35 Ill. Adm. Code, 811.319(a)(4)(B). Furthermore, the operator must complete the confirmation procedures within ~~90 days~~ 180 days of the initial sampling event.

15. Upon confirmation of a monitored increase and within 180 days of the initial sampling date, the operator shall submit a permit application for a significant modification to demonstrate an alternate source per 35 Ill. Adm. Code 811.319(a)(4)(B)(ii) or begin an assessment monitoring program in order to determine whether the solid waste disposal facility is the source of the contamination and to provide information needed to carry out a groundwater impact assessment in accordance with 35 Ill. Adm. Code 811.319(b).
16. In the event that an alternative source demonstration is denied, pursuant to 35 Ill. Adm. Code 813.105, the operator must commence sampling for the constituents listed in 35 Ill. Adm. Code 811.319(b)(5), and submit an assessment monitoring plan as a significant permit modification, both within 30 days after the dated notification of Agency denial. The operator must sample the well or wells that exhibited the confirmed increase.
17. The first quarterly statistical evaluations shall be performed on groundwater samples taken during the months of **\*\*\*MONTHS\*\*\*** and the results submitted to the Illinois EPA by **\*\*\*DATE\*\*\*** .
18. The schedule for sample collection and submission of quarterly monitoring results is as follows:

<u>Sampling Quarter</u>	<u>Sampling Due</u>	<u>Report Due Date</u>
Jan-Feb (1st)	List G1	April 15
April-May (2nd)	List <u>G</u> , G1, and G2	July 15
July-Aug (3rd)	List G1	October 15
Oct-Nov (4th)	List G1 <u>and G2</u>	January 15

G – Well Depth

G1 - Routine Groundwater Parameters

G2 - Semiannual Groundwater Parameters

19. Elevation of stick-up is to be surveyed and reported to the Illinois EPA:
  - a. When the well is installed (with the as-built diagrams),
  - b. Every two years thereafter, or
  - c. Whenever there is reason to believe that the elevation has changed.
20. Annually, the operator shall prepare an evaluation of the groundwater flow direction and the hydraulic gradients at the facility using the groundwater surface elevations (STORET #71993) determined for each monitoring event. This assessment shall be submitted with the monitoring results due on July 15.

21. All monitoring points shall be maintained in accordance with the approved permit application such that the required samples and measurements may be obtained.
22. Background concentrations which exhibit a statistically significant change shall be adjusted and updated in accordance with 35 Ill. Adm. Code 811.320(d)~~(1)~~(2) and submitted to the Illinois EPA as a permit modification.
23. Information required by Conditions **\*\*\*CONDITIONS\*\*\*** and **\*\*\*CONDITION NO.\*\*\*** must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in Attachment **\*\*\*ATTACHMENT\*\*\***. Additional guidance regarding the submittal of the information in an electronic format can be found at [www.epa.state.il.us/land/waste-mgmt/groundwater-monitoring.html](http://www.epa.state.il.us/land/waste-mgmt/groundwater-monitoring.html).

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